



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200
Fax 613 632-5246

PRELIMINARY ISSUE

Part #2

D5611-1
Job Sheet 183492

Accounting Job RD17-1048-01



Part No: D5611-1

Job Qty: 1 ea

Part Name: EC130 Skidtube



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 9/19/18

Job Tracking No:

Due Date: 9/28/18

Created By: Marie Lajeunesse

Type: R+D

Description:

Note: D5611 REVA.10 IPP REV:A 18.06.20 NEW ISSUE DD VERF:JFS

Ship Via:

POSITIVE RECALL

EFFECTIVE SEP 19 2018 AUTH DAS

RELEASED 9 DATE 18-10-04

Rev A
ECN 13-317

Bill of Materials

Job Routing

Op No	Operation	Qty	Start Date	Due Date	Standard		Workcenter/Supplier		Sign-off
					Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time	
110	Purchasing	1 pcs		9/28/18	0.00	0.00	Purchasing		SEP 19 2018
120	Packaging	1 pcs		9/28/18	0.00	0.00	Packaging2		SEP 19 2018
130	QC	1 pcs		9/28/18	0.00	0.00	QC6		38
140	Packaging	1 pcs		9/28/18	0.00	0.00	Packaging3-1		3-89
150	QC21-FG	1 Ea		9/28/18	0.00	0.00	QC21		21 SEP 26 2018

Part Op 110 - Issue P/O to Parker Fab: 040303 Manufacture D5611-1 as per dwg (Bend,Swag, Remove excess material
Descriptions: after bending) **Ship extrusion D6031-120** ***AS PER DWG NOTE 10, EXTREME CARE MUST BE TAKEN TO
PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE
FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, OR DENTS.*** Material release note is required
120 - Ensure material release note is attached

Job BOM

Part / Item	Component Name	Quantity	Operation	Container
D6031-120	Tube, Seamless	1 Ea (1 ea)	110-Purchasing	5111367
D5611-1P	EC130 Skidtube	1 pcs (1 ea)	120-Packaging	5111366

Job Allocations

Operation	Component Part	Required	Inventory	Allocated
110-Purchasing	D6031-120	1	40	0
120-Packaging	D5611-1P	1	0	0

Part Specifications

Specifications could not be found.



Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K6A 1K7
CANADA
TEL: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

Plex 9/19/18 7:45 AM Dart.lajeunesse.marie

Container No: S111368



Part: D5611-1

Job No: 183492

Serial No/Batch: S111368

Revision: A10

Inspector:

Exp Date:

Instructions:

Date: 09/19/18

DQA: _____ Date: _____

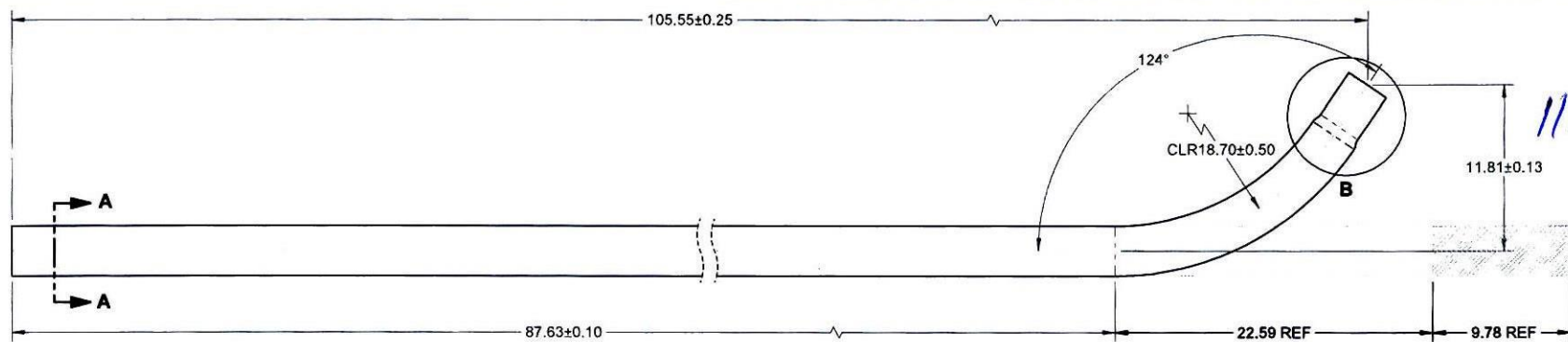


WORK ORDER NON-CONFORMANCE / UPDATE

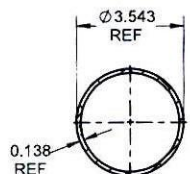
QA Closed: _____ Date: _____

Work Order update only ☐

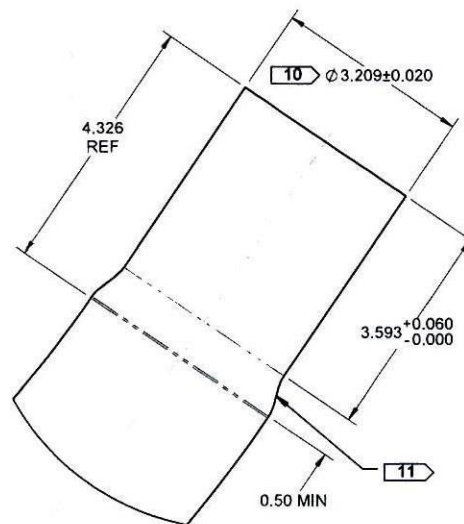
Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER :							
Misidentified ☐	Past Due ☐								



D5611-1 EC130 SKIDTUBE



SECTION A-A
SCALE 2X



DETAIL B
SCALE 4X

NOTES:

- 1) MATERIAL: MAKE FROM D6031-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.41lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.
- 10) SWAGE 3.593 +0.060/-0.000 AT THE BENT END OF THE TUBE TO Ø3.209+/-0.020
- 11) SWAGED TRANSITION MUST BE SMOOTH, GRADUAL, AND WITHOUT VISIBLE DISCONTINUITIES

Accepted by
N.D.

SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 183492 NCS
18-09-19

PRELIMINARY ISSUE

A		NEW ISSUE		ZF	18.05.07
REV.		DESCRIPTION		BY	DATE
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA DRAWING NO. D5611 TITLE EC130 SKIDTUBE COPYRIGHT © 2018 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			
DRAWN	ZF				
CHECKED	NO				
MFG. APPR.	DP				
APPROVED					
DE APPR.					
DATE	18.05.07				

REV. A10
SHEET 1 OF 1
SCALE
NTS



Dart Aerospace Ltd.
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

PURCHASE ORDER PO040303

Supplier: PAR005-VU
Parker Fabrication Inc
501 East Courtland
Morton, IL 61550-9043 USA
Phone: 309-266-8413
Fax: 309-266-7231

Ship To: 1270 Aberdeen Street
Hawkesbury
ON
K6A 1K7 Canada
Phone: 613-632-5200

PO No: PO040303
PO Date: 6/22/18
Due Date: 9/21/18
Purchase Order Revision: 2
Revision Date: 9/13/18
Ship-To Contact: Hemmerich, Steven
Phone: 613-632-5200 Ext: 281
shemmerich@dartaero.com
Pymt Terms: Net 30
Freight Terms: Collect
Special Comments:

Items

Line Item	Job	Part	Supplier Part No	Item No	Description	Status	Account	Due Date	Order Quantity	Received Quantity	Balance	Unit Price (USD)	Extended Price
1		D5611-1P			EC130 Skidtube First Article Inspection. Expedite charges included in price. Forward quality docs to buyer prior to shipment	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X SEP 19 2018 w/o183493													
Line Item Note Advance notice required for Quality audit.													
1 X	SEP 19 2018				w/o183486	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X	SEP 19 2018				w/o183487	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X	SEP 19 2018				w/o183488	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X	SEP 19 2018				w/o183489	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X	SEP 19 2018				w/o183490	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X	SEP 19 2018				w/o183491	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
1 X	SEP 19 2018				w/o183492	Firmed	-	9/21/18	1 pcs	0 pcs	1 pcs	\$502.75/pcs	\$502.75
Sub Total:									8	0	8		\$4,022.00

Grand Total: \$4,022.00

Order Notes

Terms & Condition of Purchasing(Suppliers) and Procurement Quality Clauses are an integral part of our AS9100 requirements. To learn in detail, please visit www.dartaerospace.com for further explanation.

Plex 9/19/18 8:08 AM dart.hemmerich.steven

DAS
38
9-89



Parker Fabrication, Inc.
501 East Courtland
Morton, IL 61550-9043

Ph: 309.266.8413

Fax: 309.266.7231

1 st 2
Pack List

Number: **119663**

Date: 17-Sep-18

To
Dart Aerospace
1270 Aberdeen St
Hawkesbury, ON K6A 1K7
Canada

Ship To

Steven Hemmerich
Dart Aerospace
1270 Aberdeen St
Hawkesbury, ON K6A 1K7
Canada

Ph: 1 613 632-5200

Ph: 1 613 632-5200

Ship Via

Freight Collect

Quantity

Description

8

ea

Part: EC130SKID
EC130 Skidtube rev. A10

Rev:

SO: 69748

PO: PO040303

Line: 001

4

ea

Part: EC130FWD
EC130 Fwd X Tube rev. A9

Rev:

SO: 69748

PO: PO040303

Line: 002

Thank you for your business!

DAS
38
9-89



Certificate of Conformance (CoC)

Form F-4003
Page 1 of 1
Last Revised:
3/09/2018

Supplier Name: Parker Fabrication
Supplier Number: _____
Part Description: EC130 Skidtube

Part Number: D5611
Drawing Number: D5611 Revision: A10

Purchase Order #: PO040303
Quantity: 8
Serial Number(s): 207294 (if applicable)
Lot/Heat Number: S078761 (if applicable)

All technical requirements of the contract are satisfied. Quality and performance are in accordance with the contract, the specifications, and all references and associated contractual drawings and documents.

I, as a supplier to Dart Aerospace LTD, acknowledge and certify the material covered under this document is produced in accordance with the following:

- ☒ All Contractual "Flow Down" Requirements
 - ☒ Supplier Standards Guide
 - ☒ Global Supplier Quality Manual
 - ☒ Product Conformance
 - ☒ Free of Counterfeit Material
- (Acknowledge by marking the boxes)



Signature

Quality Manager
Title

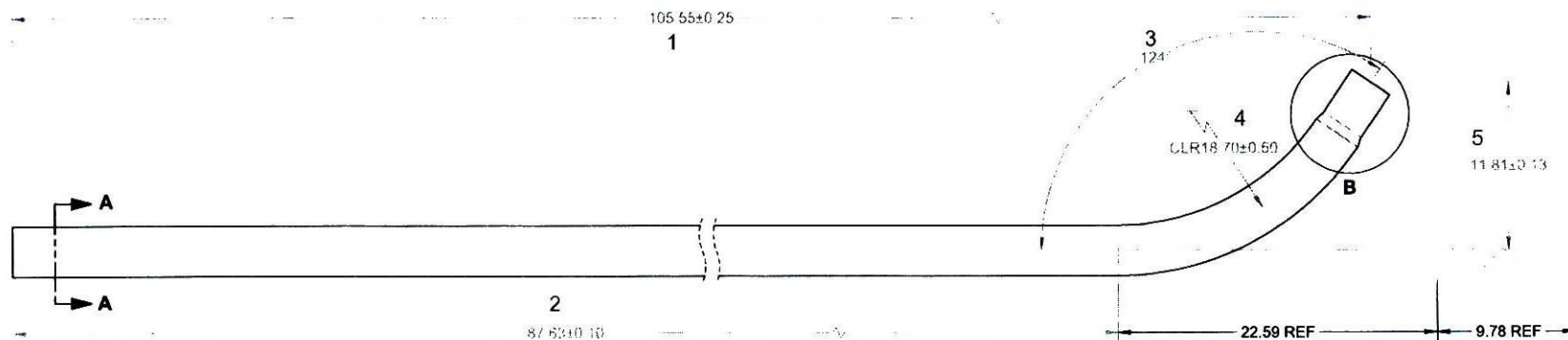
9/17/2018
Completion Date

DAS
38
3-89

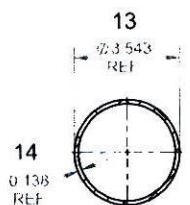
This certifies the parts/items/materials identified above conform to all applicable drawings and/or specifications as evidenced by reports or other documentation on file and all other purchase order and quality requirements have been met.

Production Part Approval Dimensional Test Results

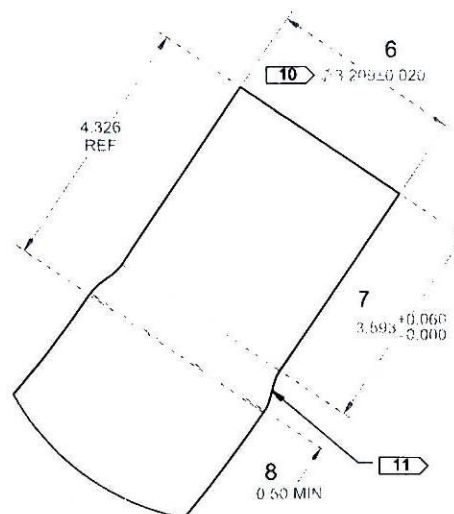
[illegible]



D5611-1 EC130 SKIDTUBE



SECTION A-A
SCALE 2X



DETAIL B
SCALE 4X

NOTES:

- 1) MATERIAL: MAKE FROM D6031-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: NONE
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.41lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.
- 10) SWAGE 3.593 +0.060/-0.000 AT THE BENT END OF THE TUBE TO Ø3.209+/-0.020
- 11) SWAGED TRANSITION MUST BE SMOOTH, GRADUAL, AND WITHOUT VISIBLE DISCONTINUITIES

PRELIMINARY ISSUE

A		NEW ISSUE		ZF		18.05.07	
REV.		DESCRIPTION		BY		DATE	
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA		REV. A10		SHEET 1 OF 1	
DRAWN	ZF						
CHECKED	NO						
MFG. APPR.	DP						
APPROVED							
DE APPR.		DRAWING NO. D5611		TITLE EC130 SKIDTUBE		SCALE NTS	
DATE	18.05.07	COPYRIGHT © 2018 BY DART AEROSPACE LTD		1-18 DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.			

Entered: _____ Date: _____

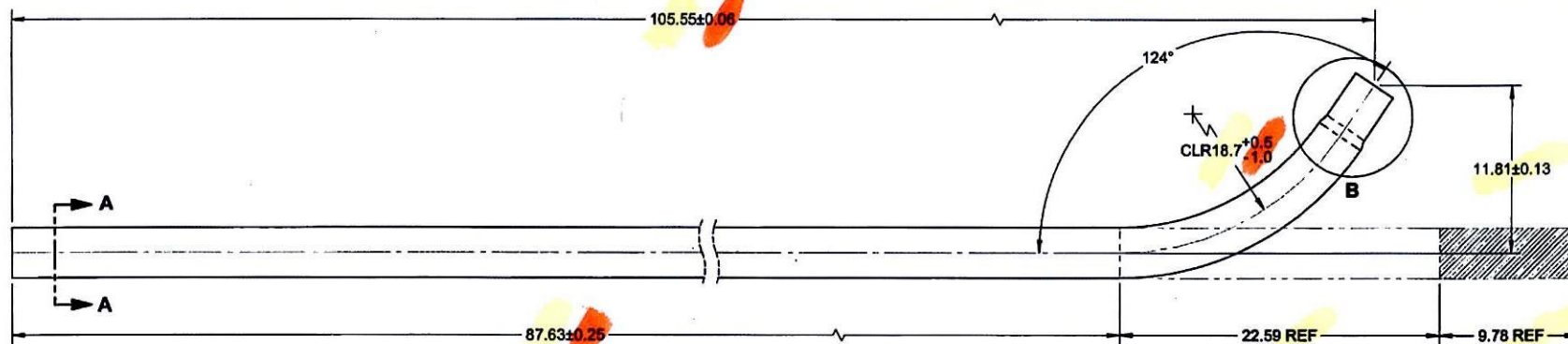


WORK ORDER NON-CONFORMANCE / ROUTE UPDATE

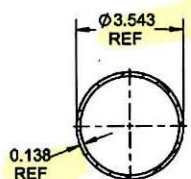
NCR No. _____

Route update only ☐

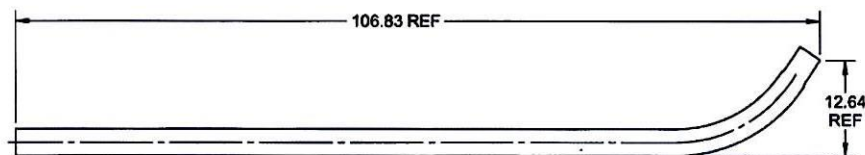
Job: _____ Part No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒	DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Eng. (Non-AW) ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Engineering ☒ Water Jet ☐ Supplier ☐ Quality ☐						
Date : 18/10/3		Sequence #:		QTY Affected :		MRB (QSI042)		
Description Work Order Deviation				Disposition				
D5611-1 WAS SUPPLIED UNTRIMMED, BOTH AFT AND FWD ENDS. <u>SWAGE O.D. is out of tolerance due to design change after manufacture.</u>				FAI DEVIATIONS ARE DUE TO LACK OF TRIMMING. PART WILL BE TRIMMED ON NEXT WORK ORDER. <u>Acceptable</u> Swage O.D. is acceptable for testing. As long as part assembles, there will be no effect on the test.				Completed By DAS 12 18/10/3 9-89
								Lead hand / Supervisor DAS 9 18-10-04 9-89
								QC / QA Coordinator DAS 9 18-10-04 9-89
Root Cause Operator ☐ Manufacturing Process ☐ Equip/Tooling ☐ Handling/Preservation ☐ Material ☐ Product Improvement ☐ Process Improvement ☐ Human Factors ☐		FAULT CATEGORY ☐ Pressure/Forced ☐ Bending ☐ Crushing ☐ Cracks ☐ Crimp/Kink/Ripple/Wave/Twist ☐ Marks/Chatter ☐ Mislabeled ☐ Contamination ☐ Misaligned/off center ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Incomplete/Unclear Instructions ☐ Drill Holes ☐ Fit/Function ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain Direction ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set/Set-up ☐ Positioned Wrong ☐ Outside Tolerance ☐ Drawing ☐ Finish ☐ Part Lost/Missing ☐ Misread						
		Other/Details:						



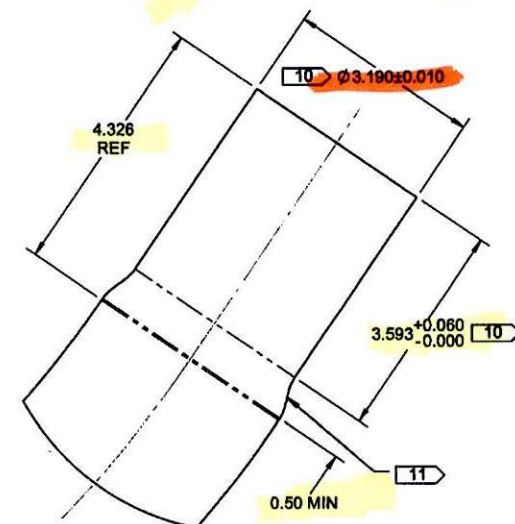
D5611-1 SKIDTUBE (EC130)



SECTION A-A
SCALE 2X



AUXILIARY VIEW
SCALE 0.5X



DETAIL B
SCALE 4X

NOTES:

- 1) MATERIAL: MAKE FROM D6031-120
STRAIGHT LENGTH = 120.00" (BEFORE BENDING / TRIMMING)
- 2) FINISH: **CHEMICAL CONVERSION COAT** EXTRUSION PER DART QSI 005 4.1 PRIOR TO SENDING EXTRUSION TO OUTSIDE VENDOR
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 16.40 lbs
- 8) EXTREME CARE MUST BE TAKEN TO PROTECT THE OUTSIDE SURFACE OF THE TUBE. THE OUTSIDE SURFACE MUST BE SMOOTH AND FREE FROM SURFACE DEFECTS SUCH AS SCRATCHES, NICKS, WRINKLES, OR DENTS. DEFECTS UP TO 0.005" MAY BE BLENDED OUT LONGITUDINALLY. CIRCUMFERENTIAL GRIND MARKS ARE UNACCEPTABLE.
- 9) MAXIMUM TUBE FLATTENING DUE TO BENDING IS 2% BASED ON OD.
- 10) SWAGE 3.593^{+0.060}_{-0.000} LENGTH AT THE BENT END OF THE TUBE TO Ø 3.190±0.010
- 11) SWAGED TRANSITION MUST BE SMOOTH, GRADUAL, AND WITHOUT VISIBLE DISCONTINUITIES

RELEASED

2018 OCT 02
ECN 14-517

APPROVED

A		NEW ISSUE		ZF	18.05.07
REV.		DESCRIPTION		BY	DATE
DESIGN	NO	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA		REV. A	
DRAWN	ZF				
CHECKED	MW	DRAWING NO. D5611		SHEET 1 OF 1	
MFG. APPR.	JFS	TITLE SKIDTUBE (EC130)		SCALE NTS	
APPROVED	NO				
DE APPR.	CP	DATE 18.05.07		COPYRIGHT © 2018 BY DART AEROSPACE LTD THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR REPRODUCED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE LTD.	